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(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) **Stamping Tool for the Forming of Surfaces of Materials
Comprising Adhesive Surfaces During the Forming Process**

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(57) 13 Claims

Notice: This application is as filed and may therefore contain an
incomplete specification.



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Specification:

Stamping tool for the forming of surfaces of materials
comprising adhesive surfaces during the forming process

The present invention relates to tools for varying the surface of most different materials particularly of materials comprising a stickyness hindering the forming process in the moment of the forming, and a method for
5 manufacturing the tools.

It is already known to provide tools for the forming of materials comprising an adhesive consistency during the forming process with a layer of e.g. silicon rubber. How-
10 ever, it is a disadvantage, that silicon rubber has only a low tool-life in these tools and that therefore the tool costs are relatively high.

Furthermore it is known to make the tools of steel and provide them with a separating agent. By the use of separating agents, however, the quality of the work-piece to be manufactured is impaired.
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It is the object of the invention to avoid these disadvantages and provide tools with which particularly plastic materials with an adhesive consistency may be formed or stamped or provided with a grained surface.
20

This object is attained with the tools mentioned before
25 by the means according to the characteristic parts of

the claims 1 or 2.

Further advantageous embodiments of the invention and the method for manufacturing the same are stated in the sub-claims.

In particular the tools may also be shaped as mould and counter mould for the injection moulding or blow moulding process. Also spin casting and casting moulds may be lined with materials according to the claims 1 and 2.

In particular the invention is suitable for the coating of cylindrical moulds or stamping rolls, respectively, used in continuous processes in stamping machines.

The materials to be processed may be thermal plastic and also reactive plastic materials which are provided in the form of foils, layers of plastic material, foamed materials without carriers, fleece materials, textile surfaces, papers and so on which are stamped or provided with a grained surface.

The novel tool surface of polytetrafluorethylene or polybinyfl fluoride therein provides the materials to be formed with a premium surface not known hitherto.

By the processing with laser beams the stamping zones are avoided which occur in all mechanical engraving processes and which are clearly visible wherein an absolutely even stamped surface without repetitions is created.

By the surface engraving with laser beams structures like leather may be manufactured with the required topographic shadings which are necessary for the provision of a good leather image. A particularly good stamping image will result when metal rolls like e.g. stamping rolls are provided with an adhesive agent and then

coated with a polyvinylfluoride foil.

The thickness of the foil which is completely glued with the metal surface is 1 to 6 mm. Particularly fine results are gained with a thickness of 2 to 4 mm polyvinylfluoride.

As an alternative a polytetrafluorethylene layer may be sintered having a closed surface.

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The polyvinylfluoride layer comprises a high temperature stability of more than 350°C and may precisely be engraved with laser beams without melting spots.

15 The tools e.g. stamping rolls provide a character like metal i.e. the surface layer will not deform during operation, and hot and also cold stamping operations may be accomplished.

20 The permanent load for stamping of a stamping tool with a layer of polytetrafluorethylene is extremely high and with a value of more than 100.000 meters corresponds with the permanent load of a pure metal roll.

25 During the operation the stamping layer remains unchanged and must not be particularly maintained.

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The embodiments of the invention for which an exclusive property or privilege is claimed are defined as follows:

1. Tool for the forming and/or stamping of materials with the tendency to adhere to the tool or to be sticky,
c h a r a c t e r i z e d i n
that the tool comprises a surface layer of laser engraved polytetrafluorethylene (PTFE).
2. Tool for the forming and/or stamping of materials with the tendency to adhere to the tool or to be sticky, characterized in that the tool comprises a surface layer of laser engraved polyvinylfluoride.
3. Tool according to one of the claims 1 or 2, characterized in that the thickness of the layer is 1 to 6 mm.
4. Tool according to claim 3, characterized in that the thickness of the layer is 2 to 4 mm.
5. Tool according to one of the preceeding claims, characterized in that the tool is a stamping roll.
6. Tool according to one of the claims 1 to 4, characterized in that it is a flat press.
7. Tool according to one of the claims 1 to 4, characterized in that it is an injection mould or blow mould.

8. Tool according to one of the claims 1 to 4, characterized in that it is a spin casting mould.
9. Tool according to one of the claims 1 to 4, characterized in that it is a casting mould.
10. Method for manufacturing the tool according to claim 1, characterized in that the forming surface and/or stamping surface is provided with a layer of polytetrafluorethylene which afterwards is engraved by laser beams.
11. Method for manufacturing the tool according to claim 2, characterized in that the forming surface and/or stamping surface is provided with a layer of polyvinylfluoride and afterwards is engraved by laser beams.
12. Method according to claim 10 or 11, characterized in that the layer is glued.
13. Method according to claim 10 or 11, characterized in that the layer is sintered.

Abstract:

The invention relates to a tool for the forming and/or stamping of materials having the tendency to adhere to the tool or to be sticky.

The new tool is characterized in that it comprises a surface layer of laser engraved polytetrafluorethylene (PTFE).

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